

THE GENUS *PERVICACIA* (TEREBRIDAE: GASTROPODA: MOLLUSCA)
IN SOUTH-EASTERN AUSTRALIA

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SUMMARY

The five known species of *Pervicacia* Iredale occurring in south-eastern Australia are re-described and figured, one new species (*Pervicacia jacksoniana*), formerly mis-identified, and one further new species (*Pervicacia russetae*) are also described and figured. Comparison of *Pervicacia* is made with the closely allied genus *Noditerebra* Cossmann.

SYSTEMATIC SECTION

Genus *PERVICACIA* Iredale, 1924. Type species by original designation *Pervicacia ustulata* (Deshayes, 1857).

Diagnosis: Shells small to medium, 14-28 mm. Protoconch medium, approx. 1½ whorls, rounded, smooth and shining, deviated. A narrow to broad sulcus at posterior third of whorls divides the axial costae to form one, occasionally two, rows of nodules adjacent to upper suture; remaining portion of costae are then off-set to right of upper nodules and continue to lower suture. Aperture broadly ovate, contracted posteriorly; a short broad open siphonal canal with shallow sinus.

Discussion: Wenz (1938-44: 1481) shows *Noditerebra* Cossmann as a subgenus of *Strioterebrum* Sacco, 1891, and includes *Pervicacia* Iredale as a synonym of *Noditerebra*, but the types for the two genera *Strioterebrum* and *Noditerebra* have little in common as regards shell morphology. The type for *Strioterebrum*, *S. basteroti* (Nyst), an Italian Tertiary fossil, has almost flat whorls, with fine and slightly sinuous axial ribs. The type for *Noditerebra*, *N. geniculata* (Tate, 1889), a Victorian Tertiary species, has very convex whorls, with bold and very prominent axial ribs, strongly angled at the periphery. The general facies of the various species included in *Pervicacia* are very similar to *Noditerebra geniculata* (Tate), with the exception of the protoconch, which in *Pervicacia* is rounded, deviated and paucispiral, whilst in *N. geniculata* it is tapering and polygyrate. (*Noditerebra geniculata* - Fig. 8).

Ludbrook (1958) considers that *Pervicacia* is a well marked lineage differing from *Noditerebra* in that the sulcus at the posterior third is generally, though not always, linear; also that "the broad sulcus in *Noditerebra* interrupts the costae to the extent that the upper portion resembles a row of nodules." This is also true of *Pervicacia*, and the only real distinction between the two genera appears to lie in the different protoconchs. It would appear that the genus *Noditerebra* is now represented in South-eastern Australia by fossil species only.

It is noted that Rudman (1969: 63) proposed a new family Perviciidae, with the genus *Pervicacia* Iredale, 1924, as the type genus. This followed the result of a study by Rudman in the same paper of the 'anatomy' of the New Zealand species *Pervicacia tristis* (Deshayes, 1859). It is not clear why this New Zealand species was placed in the genus *Pervicacia* in the first place, being devoid of any sub-sutural nodules or the broad sulcus, and having little in common with the genus. Ponder (1973) considers that the basis on which this new family was separated from the Terebridae is slight, and that introduction of the new name was superfluous.



1. *Pervicacia fictilis* (Hinds, 1844). 3 probable syntypes, "Southern Australia." x 3. (Left specimen approx. 13 x 3.3 mm, centre specimen approx. 16 x 4.8 mm, right specimen approx. 14 x 4.3 mm) (Brit. Mus. (Nat. Hist.) No. 1968252).
2. *Pervicacia bicolor* (Angas, 1867). Fig'd. specimen, Middle Harbour, Port Jackson, N.S.W. x 2.5 (18.1 x 5.1 mm.) (Aust. Museum C. 32696).
3. *Pervicacia assecla* Iredale, 1924. Holotype, Twofold Bay, N.S.W., 18-45 metres. X 1.3 (28 x 9 mm.) (Aust. Museum C. 102823).
4. *Pervicacia ustulata* (Deshayes, 1857). Fig'd. specimen, off Gabo Island, Victoria, 15-27 metres. X 1.3 (26.5 x 8.1 mm.) (Aust. Museum C. 50328).
5. *Pervicacia russetae* sp. nov. Holotype, 8 km. E. of Port Jackson, N.S.W., 220 metres. X 1.2 (29.1 x 7.2 mm.) (Aust. Museum C. 102587).
6. *Pervicacia jacksoniana* sp. nov. Holotype, Port Jackson, N.S.W. X 2.6 (15 x 4 mm.) (Hedley's fig'd. specimen (1900: 509). of "*Terebra fictilis*" Hinds — (Aust. Museum C. 8097).

Note: As only two new species are being described, and the others are all well known and previously described, study of specimens from Museums other than the Australian Museum has not been made, with the exception of *Pervicacia fictilis* (Hinds) with specimens from the South Australian Museum.

Pervicacia assecla Iredale, 1924

Fig. 3

Pervicacia assecla Iredale, 1924: 263, pl. 36, fig. 16; Macpherson and Gabriel, 1962: 241.

Description: Protoconch 1½ whorls, white, smooth and shining, rounded, deviated, merging gradually into adult sculpture. Teleoconch 10 concave whorls in length of 26 mm., spire straight sided. Sutures strongly impressed. Sculpture of one row of strong sub-sutural nodules, separated by a broad shallow sulcus from a further row of stronger nodules adjoining lower suture, 14 on penultimate whorl, which are produced into curved axial ribs on body-whorl; strong growth marks between sutures on all whorls, crossed by microscopic transverse striae. Aperture broadly ovate, columella straight and vertical; broad open siphonal canal with shallow sinus; inner-lip calloused, outer-lip thin and simple; fine thin rib from centre of columella to rear of canal. Colour whitish to light fawn, brown spots between upper nodules, anterior half of body-whorl brown.

Type locality. Twofold Bay, New South Wales, 18-45 metres.

Dimensions. Holotype, length 28 mm., breadth 9 mm. — largest specimen examined.

Location of type. Australian Museum, Sydney (C. 102823).

Distribution. Central south coast of New South Wales, southwards to Victoria, S.E. South Australia and northern Tasmania, 18-90 metres.

Material. Australian Museum 74 specimens (17 lots), author 33 specimens (3 lots), all from within above area of distribution.

Discussion. An unusual feature of this species is the widely separated rows of nodules adjoining both upper and lower sutures, due to the exceptional width of the sulcus compared with that in other species; on the body-whorl the larger lower nodules are extended as short stout ribs, tapering into fine narrow axial striae and continuing to base of shell.

Pervicacia bicolor bicolor (Angas, 1867)

Fig. 2, 9

Acus (Abretia) bicolor Angas, 1867: 111, pl. 13, fig. 7; Hedley, 1900: 509.

Acus (Abretia) assimilis Angas, 1867: 111, pl. 13, fig. 8.

Pervicacia bicolor. Macpherson and Gabriel, 1962: 240, fig. 280.

Description: Protoconch 1½ whorls, smooth and shining, rounded, deviated, merging gradually into adult sculpture. Teleoconch 10 convex whorls in length of 19 mm., spire straight sided. Sutures strongly impressed. Sculpture of very fine triangular sub-sutural nodules, missing in some specimens, with slight shallow sulcus below, followed by oblique axial ribs, thin and fine to broader and more elevated, extending to lower suture, varying from 12 to 24 on penultimate whorl; microscopic growth lines between ribs. Aperture widely ovate, constricted posteriorly, short wide open siphonal canal with shallow sinus; columella straight and vertical; inner-lip slightly calloused, outer-lip thin and simple; fine thin rib extended from centre of columella to rear of canal. Colour cream or off-white, light brown narrow band below sutures, anterior half of body-whorl brown, occasional brown axial flames in places.

Type locality. Middle Harbour, Port Jackson, New South Wales.

Dimensions. Holotype, length 16.9 mm., breadth 4.2 mm. Maximum adult size approx. 20 mm. x 5 mm.

7. *Pervicacia kieneri* (Deshayes, 1859). Fig'd. specimen, Encounter Bay, S. Australia. X 2.2 (20.7 x 5.8 mm.) (Aust. Museum C. 83664).

8. *Noditerebra geniculata* (Tate, 1889). Fig'd. specimens, Grange Burn Coquina (Kalimnan), Muddy Creek, near Hamilton, Victoria. X 4.6 (12.2 x 3.4 mm. and 6.8 x 2.3 mm.) Pres. J. Kerslake, 1973. (Aust. Museum C. 103062).

9. *Pervicacia assimilis* (Angas, 1867) (= *Pervicacia bicolor* (Angas, 1867)). 2 syntypes, Port Jackson, N.S.W. X 3 (10.1 x 3.5 mm. and 11.3 x 3.5 mm.) (Brit. Museum (Nat. Hist.), 1870.10.26.53). Photos. 1 & 9. T. W. Parmenter, Photo Unit, Brit. Museum (Nat. Hist.).

2 — 8. Gregory Millen, Aust. Museum, Sydney.

Location of type. British Museum (Natural History), London, reg'd. number not ascertained but probably immediately before that of *P. assimilis* (Angas) which is 1870: 10: 26: 53 (see below).

Distribution. Keppel Bay, southern Queensland, southwards along New South Wales and Victorian coasts, west to South Australia, also north, east and southern Tasmania (183 metres off Cape Pillar). Sub-tidal to 183 metres.

Material. Australian Museum 110 specimens (21 lots), author 52 specimens (10 lots), all from within above area of distribution.

Discussion. The sculpture in this species is the most variable of any in the genus; in some specimens the depressed band of sub-sutural nodules is pronounced and is followed by well defined axial ribs, in others the depression is barely visible as such, there are no nodules, and the ribs below vary from faint axial striae to a few fairly prominent ribs.

Enlarged photos of the two syntypes of *Pervicacia assimilis* (Angas, 1867), followed by one of the syntypes on loan from the British Museum (Natural History) show conclusively that *Pervicacia assimilis* (Angas) is synonymous with *P. bicolor* (Angas), and this latter name takes page precedence.

Pervicacia bicolor subplicata (Cotton, 1952)

Type locality is 20 fathoms, Backstairs Passage, South Australia. Holotype is Reg'd. No. D. 10177, South Australian Museum and measures 14 mm. in length by 3.5 mm. in breadth. A specimen from Streaky Bay, Eyre Peninsula, South Australia, in the author's collection, falls within the range of variation exhibited by *Noditerebra bicolor*, but has a protoconch 1 mm. diameter at its widest point, the protoconch on all other specimens varying very little either way from 0.5 mm. The first four teleoconch whorls are consequently also wider than usual but then equal in width to others throughout the balance of the teleoconch. This wide protoconch is a feature of the holotype, and was described by Cotton as "slightly mamillate." A long series of specimens with this feature would be necessary to decide whether the subspecies is valid, it probably being an aberration.

Pervicacia fictilis (Hinds, 1844)

Fig. 1

Terebra fictilis Hinds, 1844: 183, pl. 45, figs. 109, 110; Tryon, 1885: 25, pl. 7, figs. 11, 14; Hedley, 1900: 509, pl. 26, fig. 14.

Pervicacia helenae Cotton, 1952: 40, pl. 3, fig. 1.

Description: Protoconch 2 whorls, inflated, white, smooth and shining, slightly deviated, merging gradually into adult sculpture. Teleoconch 10 whorls in length of 22 mm., slightly convex, spire straight sided. Sutures strongly impressed. Sculpture — row of sharp-edged sub-sutural nodules, fine narrow incised groove below, followed by sharply-edged almost vertical axial ribs extending to lower suture; ribs are off-set at approx. 30° to right from nodules above, and vary from 16 to 28 on penultimate whorl, fading out gradually at periphery of body-whorl. Aperture broadly ovate, contracted posteriorly; short wide open siphonal canal with shallow sinus; columella straight and vertical; inner-lip lightly calloused, outer-lip thin and simple; fine thin rib from centre of columella to rear of canal. Colour fawn with brown band round sub-sutural nodules; anterior one-third of body-whorl brown, rear of canal tipped with white.

Type locality. "Australia; most probably from somewhere on its southern shores" (Hinds). Type locality for *Pervicacia helenae* Cotton is Farme Beach, Coffin Bay, Eyre Peninsula, South Australia.

Dimensions. Holotype, length 14.5 mm., breadth 4.5 mm. (Hinds' drawing). Adult size approx. 24 mm. x 6 mm. with 10 whorls.

Location of type. British Museum (Natural History), 3 probable syntypes, Reg'd. No. 1968252.

Distribution. From enquiries made this species appears to be fairly rare, and confined so far as known to the southern region of Eyre Peninsula, in the vicinity of Coffin Bay on the west coast and Port Lincoln on the east. Apparently sub-tidal.

Material. South Australian Museum, on loan, 8 specimens from type locality. Author 3 specimens from type locality.

Discussion. Hinds' original description and figure of *Terebra fictilis* were too vague to enable identification of the species with any degree of accuracy. Hedley (1900: 509) described and figured a small species from Manly Beach, Sydney, which he suggested was Hinds' long-lost species (see *Pervicacia jacksoniana* sp. nov.) Hinds' locality stating "probably from somewhere on its southern shores" adds a little further weight to the identification, but unfortunately he failed to state the

source of his material. Specimens on loan from the South Australian Museum compared with enlarged photos of the probable syntypes confirm the identification beyond doubt.

Pervicacia jacksoniana sp. nov.

Fig. 6

Terebra fictilis. Hedley, 1900: 509, pl. 26, fig. 14: non Hinds, 1844.

Description: Protoconch $1\frac{1}{2}$ whorls, smooth and shining, slightly deviated, merging gradually into adult sculpture. Teleoconch 10 whorls in length of 14 mm., spire straight sided. Sutures well impressed. Sculpture of large blunt sub-sutural nodules, 10 on penultimate whorl, suppressed on some specimens, followed by larger and more elongate nodules, or short ribs, off-set to right at about 30° , often fading before reaching lower suture; a thin depressed groove separates the upper nodules and lower ribs; growth lines microscopic. Aperture widely ovate, restricted posteriorly; wide open siphonal canal with shallow sinus; columella straight and vertical; inner-lip reflected as light glaze or callus on to body-whorl; outer-lip thin and simple; a fine thin rib runs from centre of columella to rear of canal. Colour pale cream, light brown spots between nodules and upper suture; light brown axial flames and maculations on most whorls; anterior end of body-whorl brown with white line above.

Type locality. Port Jackson, New South Wales.

Dimensions. Holotype, length 15 mm., breadth 4 mm. Fully grown.

Location of type. Australian Museum, Sydney, (C. 8097).

Distribution. Ballina, northern New South Wales ($28^\circ 52' S.$, $153^\circ 34' E.$), southwards along New South Wales and Victorian coasts, then westwards to S.E. South Australia. Sub-tidal to 25 metres.

Material. Australian Museum 8 specimens (5 lots), author 23 specimens (6 lots), all from within above area of distribution.

Discussion. Hedley suggested (1900: 509) that this species, known in New South Wales as *Terebra assimilis* Angas, was possibly Hinds' long-lost *Terebra fictilis*; however the identity of that species having now been established (see preceding species) leaves the within species un-named. It can be readily recognised by the few large coarse nodules below the suture, with a small brown spot above each, and the short wide blunt nodular ribs below the sub-sutural nodules, differing markedly from the sculpture of others in the genus.

Pervicacia kieneri (Deshayes, 1859)

Fig. 7

Terebra kieneri Deshayes, 1859: 294.

Pervicacia kieneri. Macpherson and Gabriel, 1962: 240, fig. 279.

Description: Protoconch 2 whorls, smooth and shining, slightly deviated, tan coloured, merging gradually into adult sculpture. Teleoconch 10 slightly convex whorls in length of 27 mm., sides of spire straight. Sutures deeply impressed. Sculpture of one row of elongate axial nodules below suture, divided by a fine deep groove from sinuous axial ribs extending to lower suture, 22-24 on penultimate whorl; ribs are a continuation of the sub-sutural nodules off-set to right at an angle of approx. 30° below groove. Aperture widely ovate, contracted posteriorly; columella straight and inclined slightly to left; inner-lip lightly calloused on to body-whorl, outer-lip thin and simple; a thin fine rib extends from centre of columella to rear of a wide open siphonal canal with shallow sinus. Colour — unicoloured light, medium or dark brown, some with cream nodules and balance medium brown.

Type locality. Van Diemen's Land (Tasmania).

Dimensions. Holotype, length 22 mm., breadth 6 mm. Adult size up to 27 mm. length, 7 mm. breadth.

Location of type. Probably École des Mines, Paris, confirmation not sought.

Distribution. Victoria, Tasmania, South Australia, and westwards along south coast of Western Australia at least as far as Recherche Archipelago.

Material. Australian Museum 14 specimens (7 lots), author 22 specimens (4 lots), all from within above area of distribution.

Discussion. This species, although usually unicoloured, can be 2 or 3 shades from cream to dark brown, which applies to many Port Lincoln specimens, at eastern side of bottom of Eyre Peninsula; others from western side at Coffin Bay are usually dark and unicoloured. The fine regular crowded axial ribs identify this species from others in the genus without difficulty.

Pervicacia russetae sp. nov.

Fig. 5

Description: Protoconch — apical whorls missing. Teleoconch 10½ whorls, probably 12 if complete, flat-sided below sub-sutural nodules, spire straight sided. Sutures strongly impressed. Sculpture of small widely spaced nodules at top of whorls adjoining upper suture; a further band of larger nodules off-set to right below first band at angle of approx. 30°; fine vertical growth marks below nodules extend to lower suture, those descending from nodules on last three whorls strengthening into fine riblets, terminating at level of suture on body-whorl; fine spiral threads cross both nodules and flat space below, 10 on penultimate whorl and over 30 on body whorl. Aperture broadly ovate, narrowing posteriorly; a short broad open siphonal canal recurved to left below columella, with shallow sinus; a fine thread from centre of columella to rear of canal; columella straight and vertical; inner-lip reflected as thin glaze over columella and parietal wall, outer-lip thin and simple. Colour light reddish-fawn throughout, anterior end of body-whorl darker brown. Operculum not available.

Type locality. 8 km. E. of Port Jackson, New South Wales, 220 metres (ex M.V. "Challenge," 1959).

Dimensions. Holotype, length 29.1 mm., ex apical whorls, breadth 7.2 mm.

Location of type. Australian Museum, Sydney, (C. 102587).

Distribution. Type locality only.

Material. Holotype is unique.

Discussion. This novelty is quite distinct from any other known species, the double row of small sub-sutural nodules and turreted appearance of the whorls setting it apart. It is in fine condition apart from the missing apical whorls.

Pervicacia ustulata (Deshayes, 1857)

Fig. 4

Terebra ustulata Deshayes, 1857: 97, pl. 3, fig. 12; Tryon, 1885: 18, pl. 4, fig. 59.

Pervicacia ustulata Iredale, 1924: 262; Macpherson and Gabriel, 1962: 240, fig. 278.

Description: Protoconch 1½ whorls, smooth and shining, rounded, deviated, merging gradually into adult sculpture. Teleoconch 9 slightly convex whorls in length of 28 mm., spire straight sided. Sutures well impressed. Sculpture of sharp-edged axial ribs, 24 on penultimate whorl, depressed whilst diverging to right across a broad shallow sulcus in upper one-third of whorl, continuing vertically to lower suture, becoming obsolete towards anterior end of body-whorl; numerous microscopic transverse grooves cross both ribs and interstices; growth lines both numerous and microscopic. Aperture broadly ovate, columella vertical; broad open siphonal canal with shallow sinus, inclined to left; outer-lip thin and simple; fine thin rib from centre of columella to rear of canal. Colour pale amber or light grey, anterior half of body-whorl brown or purple-brown, sub-sutural nodular upper portion of ribs tinted with same colour in some specimens.

Type locality. Tasmania.

Dimensions. Holotype, length 35 mm., breadth 10 mm. Fully grown.

Location of type. Probably Ecole des Mines, Paris, reg'd. number not ascertained.

Distribution. Port Jackson, New South Wales, southwards to Victoria, south-east South Australia, north and eastern Tasmania to Storm Bay, southern Tasmania. Depths sub-tidal to 80 metres.

Material. Australian Museum 16 specimens (6 lots), author 11 specimens (5 lots), all from within above area of distribution.

Discussion. The nearest congener to this species, *Pervicacia assecla* Iredale, 1924, has a decidedly broader sulcus crossing the upper one third of whorls, smooth except for growth lines and microscopic transverse grooves; also the vertical lower portion of axial ribs in *Pervicacia ustulata* are replaced in *P. assecla* by shorter elongate nodules, inclined to left, showing as curved axial ribs only on body-whorl.

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